

From: [REDACTED]
Sent: 06/30/2017 3:28:32 PM (-07:00)
To: "Brooke Watson" <watson@ecohealthalliance.org>
Cc: "Peter Daszak" <daszak@ecohealthalliance.org>; "Jonna Mazet" <jkmazet@ucdavis.edu>; "David John Wolking" <djwolking@ucdavis.edu>; "Tracey Goldstein" <tgoldstein@ucdavis.edu>; "Christine Kreuder Johnson" <ckjohnson@ucdavis.edu>
Subject: RE: GVP country budget call 3pm PDT/6pm EST

Hi Brooke,

Thank you for sharing the details the new budget calculations.
Numbers 1 and 2 look good, and I will consult with our team about the \$100/sample issue.

Happy 4th,

[REDACTED]

REDACTED

One health leadership fellow
University of California, Davis
One Health Institute
School of Veterinary Medicine

From: Brooke Watson [mailto:watson@ecohealthalliance.org]
Sent: Friday, June 30, 2017 11:50 AM
To: [REDACTED]
Cc: Peter Daszak <daszak@ecohealthalliance.org>; Jonna Mazet <jkmazet@ucdavis.edu>; David John Wolking <djwolking@ucdavis.edu>; Tracey Goldstein <tgoldstein@ucdavis.edu>; Christine Kreuder Johnson <ckjohnson@UCDAVIS.EDU>
Subject: Re: GVP country budget call 3pm PDT/6pm EST

Hey [REDACTED]

Thanks for checking in, and thanks Chris and Tracey for your really helpful feedback.

I've reattached the latest draft of the General Presentation slide deck and the GVP_country_list (with costs by phase and by country).

These are the updates I've made:

1. Fixed costs for all countries are now 4 years * 1M * the number of sampling sites, rather than \$1.5M * number of sample sites, as we discussed on the call. This is still an oversimplification, as Brazil and Costa Rica are not likely to take the same amount of time / intensity to sample, but at least the ballpark now includes some measure of annual costs.

2. the number of samples per species is reduced to 1800, as about 20% of species are rare/threatened and we should only target 1000 samples for those species. (Thanks Chris for that great advice!) Those are reflected in the excel sheet and in the updated numbers in the powerpoint.

I am still using \$100 as the "per sample" multiplier - I recognize that this is a **very** optimistic estimate that fully relies on in-kind support, but I don't know that I was still on the call if any specific changes were discussed, so I left it as is.

It looks like total costs for just mammals for all 3 waves now come to \$968,220,000, which will easily be pushed over a billion when we add waterbirds. Slide 33 therefore needs to be updated, but I'll let you all change that or wait until the costs are confirmed to change it.

I now turn it over to the budget team - please make any alterations or improvements to those numbers that you see fit, and let me know if I misunderstood those base assumptions. If you have any questions related to the sampling, please don't hesitate to ask.

Thanks all!

Best,

Brooke

[GVP.General Presentation.6.30.2017.pptx](#)

On Fri, Jun 30, 2017 at 12:43 PM, [REDACTED] wrote:

Hi Brooke,

I just wanted to check in about GVP country budget calculations. I see that Tracey and Chris have provided input after our call on Wednesday – please let us know how we can help now.

With thanks,

[REDACTED]

[REDACTED]

One health leadership fellow
University of California, Davis
One Health Institute
School of Veterinary Medicine

From: Christine Kreuder Johnson

Sent: Thursday, June 29, 2017 6:38 PM

To: Brooke Watson <watson@ecohealthalliance.org>; [REDACTED]

Cc: Peter Daszak <daszak@ecohealthalliance.org>; Jonna Mazet <jkmazet@ucdavis.edu>; David John Wolking <djwolving@ucdavis.edu>; Tracey Goldstein <tgoldstein@ucdavis.edu>

Subject: Re: GVP country budget call 3pm PDT/6pm EST

Thanks Brooke,

It looks like (from my very quick review), that about 20% of the species have status ranging from near threatened to critically endangered. Can we thus adjust the # of individuals sampled for these species from 2,000 to 1,000?, as very high

sample sizes are not realistic for most of these species. It's not clear how population size affects viral diversity but guessing we can well justify the smaller sample size for these species based on logistics alone.

Because it looks like the cost calculations are not on a per species basis, we could just estimate **1,800 individuals sampled per species on average**, which would mean 2,000 samples for the common species, and 1,000 samples for the threatened species.

Hoping this can divert funding back into fixed costs where they're needed.

I think we've now addressed all questions below but please let me know if I can explain anything further.

Thanks for your work on this,

/ckj

From: Brooke Watson <watson@ecohealthalliance.org>

Date: Thursday, June 29, 2017 at 7:57 AM

To: [REDACTED]

Cc: Peter Daszak <daszak@ecohealthalliance.org>, Jonna Mazet <jkmazet@ucdavis.edu>, David John Wolking <djwolking@ucdavis.edu>, Tracey Goldstein <tgoldstein@ucdavis.edu>, Christine Kreuder Johnson <ckjohnson@UCDAVIS.EDU>

Subject: Re: GVP country budget call 3pm PDT/6pm EST

Hi team,

After our call yesterday, I wanted to share the following datasets with you all.

"GVP_spp_with_common_names" is an updated data table with the lists of species in each phase - I've added additional columns for Red List status and common name.

"Pteropus_virome_estimates" are the estimated number of viruses we would find with a given number of samples, based on Anthony et al. 2013. We used Simon's original data and the [iNEXT](#) Chao estimator in R to interpolate and extrapolate these values.

For Pteropus, we estimate that 51% of one species's virome can be found with 375 samples, 60% would take 560 samples, 70% requires 854, and 75% requires 1051. Confidence intervals around these estimates are in the chart.

"GVP_cost_chart" uses these estimates, along with the value from Anthony 2013 that states that 7079 samples would cost \$1.2 M, and does two things:

1. extrapolates these costs to all mammal species.
2. works backward based on a flat rate to find costs for 99, 95, 85 etc. % of the virome.
3. Adds these to the cost estimates for all waterfowl and "50 domestic species", which are included in the GVP *Science* paper.

Note that these are flat per-sample costs that don't differentiate between fixed and variable costs, so take that with a grain of salt. Also, as Peter mentioned, our Marxan-based target sampling only covers some 63% of the mammals in the world (an estimated 70% of the virome **if** these species are sampled to saturation), so if we're taking a percent of a percent, we should factor that into the way we discuss what we're providing.

Hopefully these are helpful in the next steps. Let me know if you have any questions.

Best,

Brooke

On Wed, Jun 28, 2017 at 6:45 PM, Brooke Watson <watson@ecohealthalliance.org> wrote:

Hi all,

Thanks for a productive call this afternoon. We discussed a lot of important parameters for the GVP and raised several questions.

Below are some questions that came up on the call that I think will help us refine the modeling and the pitch - I'd love the implementation team's input on the below:

1. Are there species that we should exclude a priori?
2. How many samples do we actually need per species? (2000? 1000?)
3. Should we group species into "high-sample" and "low-sample" species based on some factor (zoonotic risk, abundance/threat status, order?)
4. How do we rank the species?
5. What are the best estimates for rough fixed infrastructure costs?

Note - in the analyses presented during the May webinar, we have been using a fixed cost of \$1.5M per sample site.

Previous estimates have used PREDICT costs, roughly estimated at \$1 million/year/country.

6. Should infrastructure costs be calculated at the country level or the sampling unit level?
7. How much would 70% of the virome cost with these new parameters? 60%? 51%?
8. How long will each (the average) sampling unit cost to complete the GVP?

These will help refine the modeling. We're still at 10,000 feet, so rough estimates are fine, but (for example) it was good to learn that the fixed costs ought to be annualized, and if there are any other red flags that should be factored into the optimization site selection, please let me know.

I'll start working on questions 4 and 7 with Yasha, Kevin and Carlos. The items I most need input on are 5, 6, and 8.

Thanks everyone for your input!

Best,

Brooke

On Wed, Jun 28, 2017 at 5:20 PM, **REDACTED** wrote:

Hi Peter, Jonna and Brooke,
Cc David, Tracey and Chris

Please see the call-in information below for our meeting today:

GVP country budget call June 28 3pm PDT/6pm EST

REDACTED Access code **REDACTED**

Thank you for joining,

REDACTED

REDACTED

One health leadership fellow

University of California, Davis
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Brooke Watson, MSc

Research Scientist

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EcoHealth Alliance leads cutting-edge research into the critical connections between human and wildlife health and delicate ecosystems. With this science we develop solutions that promote conservation and prevent pandemics.

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